

REMARKS

Claims 19 to 21 and 43 have been amended better to point out that which applicants regard as their invention. The change is supported at least by original claims 20 and 21 and the related disclosure. More particularly, claims 19 to 21 now specify that the number of carbon atoms in the phenylene group is six. The Examiner is directed to the specification at the paragraph bridging pages 40 and 41, particularly the last two sentences thereof. Claim 19 now specifies also that the phenylene group is substituted or unsubstituted, as the next-to-last sentence of that paragraph indicates. Claim 19 has been amended also to overcome the rejection under the second paragraph of 35 USC 112 discussed below. Claims 20 and 21 now, as does claim 19, specify that the Y group is a substituted aryl group substituted with an electron-donating substituent and containing five or more conjugated bonds. Claim 43 has been amended to exclude the hydrogen atom from the definition of the X1 and X2 groups.

The ongoing allowance of claims 24 to 42 and 48 to 50 and the indication that claims 45 to 47 contain allowable subject matter are noted with appreciation.

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Claim 19 was rejected under the second paragraph of 35 USC 112 for failing to comply with the written description requirement of the Patent Code. Claim 19 now specifies that the aryl group represented by Y contains five or more conjugated bonds, a requirement in the claim as filed. The rejection is believed to be overcome.

The rejection of claim 19 under 35 USC 102 as anticipated by Kawamura et al. '129 is respectfully traversed.

The Examiner cites specifically compounds of the formulae PD-56 and PD-56' as compounds within the scope of claim 19. Applicants respectfully disagree, pointing out that the group in the reference characterized by the Examiner as a phenylene group is one composed of two benzene rings bonded by X (see general formula (I)) which at a minimum contains 12 carbon atoms. Claim 19 states expressly that the carbon atom number in the phenylene group is 6. Both PD-56 and PD-56' also show biphenylene groups rather than phenylene groups and the rejection should be withdrawn. The reference does not anticipate the claims.

The rejection of claims 19 to 21, 43, 44, and 51 to 53 under 35 USC 103 as unpatentable over Nakaya et al. '557 in view of Van Slyke et al. '432 is also respectfully traversed.

Applicants again respectfully submit that there is a significant and patentable difference between a compound containing a biphenylene group and a compound containing a phenylene group in the context of the present invention. As applicants explained on pages 27 and 28 of the Amendment Under 37 CFR 1.111 filed June 8, 2004, the N-Ar³-N group of the present claims, because Ar³ is restricted to a phenylene group (now stated specifically to one that does not have more than six carbon atoms) is one, unlike a corresponding group where the aromatic moiety is biphenylene (as shown in the primary reference) does not rotate. The lack of rotation facilitates migration of a hole from the charge transport group to a group contributing to luminescence, which means that a high electroluminescent efficiency is achieved. Thus, applicants submit with respect that there is no "reasonable" expectation of similar properties between the two different types of compounds. The rejection should be withdrawn for this reason alone.

With respect to claims 19 to 21, each defines substituent X as one "containing two or more carbon rings and non-planarly bonding to a diphenylamine portion." This description of X is based upon the disclosure at page 21, line 11 to page 22, line 10. That disclosure reads

"One phenyl group of diphenylamine is substituted with the above-mentioned anthryl group and the other is substituted with a substituted or unsubstituted 2,2-diphenyl vinyl group. Such compound has a portion contributing to luminescence where at least two molecular orbitals contributing to luminescent transition are localized, and an electron cloud of the portion contributing to luminescence and a molecular cloud of the portion contributing to hole transport are localized such that the electron cloud and the molecular cloud do not overlap each other. Further, since a bulky substituent, a 2,2- diphenylvinyl group, is bonded, this portion becomes twisted and thus the molecules become asymmetric and nonplanar. Thus, a thin film EL device is obtained that achieves high electroluminescent efficiency, a low operating voltage, and an extended lifetime even when the device is operated at a wide range of operating conditions from a direct current to high duty cycles."

The 2,2- diphenylvinyl group discussed in the quoted paragraph is a substituent non-planarly bonding to a diphenylamine portion. Neither reference used to reject the claims contains any teaching or suggestion regarding the need to have a substituent on one of the phenyl groups of the diphenylamine portion that involves twisting, asymmetry and non-planar bonding and the advantageous effects associated therewith discussed in the quoted portion of the specification. The Examiner's detailed explanation of the bases for the rejection are noted and appreciated. There seems to be no mention of the

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particular substituent required at X; the references appear to show no awareness thereof. The rejection should be withdrawn.

Claim 43, as noted above, has been changed to eliminate the hydrogen atom as a member of the possible groups for X1 and X2 in the formulae. Those moieties are now restricted to any of a substituted or unsubstituted 2,2- diphenylvinyl group, 4,4- diphenylbuta -1, 3-dienyl group or a fluorine-9-ylidnmethyl group. The specification at page 17, lines 12 to 17; page 18, lines 7 to 9, and page 19, lines 18 to 20 informs the reader that introducing a substituent as recited in claim 43 will cause asymmetric and non-planar molecules, which decrease molecular association and crystallization, allowing one to make a device having high electroluminescent efficiency. The references do not teach or suggest these same indicated advantages. Claim 44, because it depends from claim 43, is likewise allowable.

Applicants submit that claims 51 to 53 patentably define over the cited art also. General formula 15 in claim 51 shows terphenyl groups which are discussed in the application at page 35, lines 9 to 13. These terphenyl groups are substituents that bond non-planarly to a diphenylamine portion and can give a thin film EL device achieving high electroluminescent efficiency, a low operating voltage, and extended lifetime. The references do

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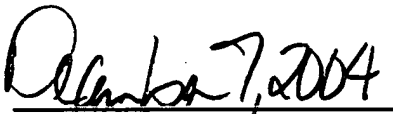
not teach or suggest the advantages provided by the subjects matter of these claims. The rejection should be withdrawn.

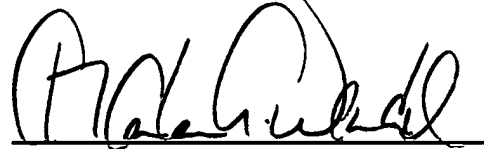
Reconsideration of the case is earnestly solicited.

The Examiner is requested to telephone the undersigned if additional changes are required in the case prior to allowance.

Respectfully submitted,

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Date


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